2021 ASSESSMENT MATERIALS

GCSE
PHYSICS

Physics Test 6: Space Physics (Foundation)

Total number of marks: 29

0 2 Our solar system includes the Sun, planets and moons.

0 2 . 1 Complete the sentence.

Choose the answer from the box.

[1 mark]

Andromeda	Milky Way	Pinwheel	Whirlpool

Our solar system is part of the Milky Way galaxy.

0 2 . 2 Planets orbit the Sun.

What force causes planets to orbit the Sun?

[1 mark]

Gravitational force

Table 2 shows data about five planets.

Table 2

Planet	Mean distance from the Sun in millions of kilometres	Mean surface temperature in °C
Earth	150	+22
Mars	228	–48
Jupiter	778	**X**
Saturn	1430	–178
Uranus	2870	–200

0 2 . 3 How does the mean surface temperature of the planets in **Table 2** change as the mean distance from the Sun increases?

[1 mark]

As mean distance increases, mean surface temperature decreases.

0 2 . 4 Predict the mean surface temperature of Jupiter (**X**) in **Table 2**.

[1 mark]

Mean surface temperature of Jupiter = -100 °C

0 2 . 5 Five of the planets in the solar system are given in **Table 2**.

How many other planets are there in the solar system?

[1 mark]

Tick (✓) **one** box.

- Two ☐
- Three ☑
- Four ☐
- Five ☐

0 2 . 6 Our Moon is a natural satellite.

Why is the Moon classified as a satellite?

[1 mark]

Tick (✓) **one** box.

- It has no atmosphere. ☐
- It has no gravitational field. ☐
- It is too small to be a planet. ☐
- It orbits a planet. ☑

0 2 . 7 How are planets and moons similar?

[2 marks]

Tick (✓) **two** boxes.

- Their mass is about the same. ☐
- Their orbits are circular. ☐
- Their surfaces are the same colour. ☐
- They are similar in diameter. ☐
- They do not emit visible light. ☑

0 2 . 8 The diameter of the Earth is 13 000 km.

The diameter of the Sun is 110 times greater than the diameter of the Earth.

Calculate the diameter of the Sun.

13000 × 110

[2 marks]

Diameter of the Sun = 1430000 km

0 1 . 1 The Sun is a star.

Which galaxy is the Sun in?

Tick **one** box.

[1 mark]

Cartwheel	☐
Milky Way	✓
Starburst	☐
Tadpole	☐

0 1 . 2 Light takes 500 seconds to travel from the Sun to the Earth.

Light travels at 300 000 kilometres per second.

Calculate the distance between the Sun and the Earth.

Use the equation:

distance = speed × time

[2 marks]

$d = 300000 \times 500$

$d = 150000000$

Distance = 1.5×10^8 kilometres

Table 1 gives information about some of the planets in our solar system.

The planets are in order of increasing distance from the Sun.

Table 1

Planet	Time to orbit the Sun in years
Mercury	0.2
Venus	0.6
Earth	1.0
Mars	
Jupiter	12.0

0 1 . 3 There are some planets in our solar system missing from **Table 1**.

How many planets are missing?

[1 mark]

3 planets

0 1 . 4 Estimate how many years it takes Mars to orbit the Sun.

[1 mark]

1.8 years

0 1 . 5 Calculate how many times Venus will orbit the Sun in 9 years.

[2 marks]

$9 \div 0.6$

In 9 years Venus will orbit the Sun 15 times.

0 5 . 1 The light from distant galaxies shows red-shift.

Complete the sentence.

[1 mark]

The term red-shift describes the observed increase

in the wavelength of the light from a distant galaxy.

0 5 . 2 The Big Bang theory is one model used to explain the origin of the universe.

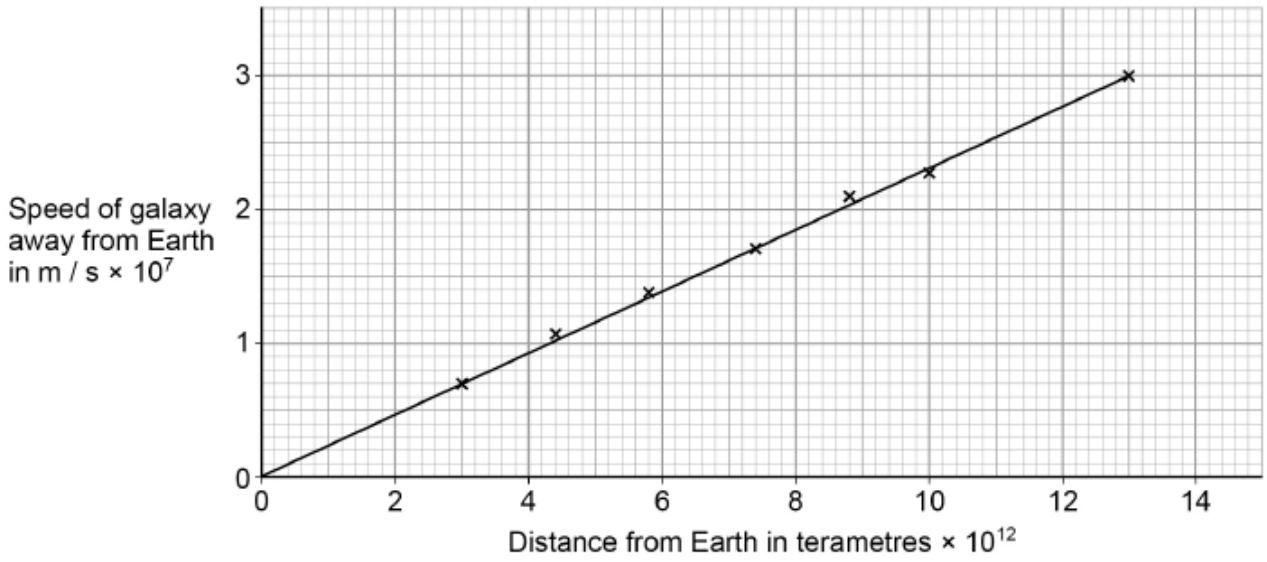
How does the Big Bang theory describe the universe when it began?

[1 mark]

The theory states that all matter of the universe was concentrated at a single point and bagan expanding at a rapid rate.

Figure 9 shows data scientists have calculated from measurements of red-shift.

Figure 9



0 5 . 3 Describe the relationship between the speed of a galaxy and the distance the galaxy is from the Earth.

[1 mark]

The greater the distance from Earth, the faster the galaxy moves away from Earth. The relationship is directly proportional.

0 2 . 1 Complete the sentences.

[2 marks]

The Sun is a stable star. This is because the forces pulling inwards caused by Gravity are in equilibrium with the forces pushing outwards caused by the energy released by nuclear fusion.

0 2 . 4 Some stars are much more massive than the Sun.

Describe the life cycle of stars much more massive than the Sun, including the formation of new elements.

[6 marks]

0 2 . 5 Stars emit radiation with a range of wavelengths.

Which property of a star does the range of wavelengths depend on?

[1 mark]

Tick (✓) **one** box.

- Density ☐
- Mass ☐
- Temperature ☑
- Volume ☐

2.4 Answer

The star is formed from a cloud of dust and gas (nebula) which becomes a protostar and a main sequence star. At the end of its cycle it transforms from a red super giant to a supernova and finally a black hole or a neutron star.